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10/023,641	12/21/2001	Timothy Harris Kuhl	123081-339665 TO1215-0083	6343
7590 06/19/2006			EXAMINER SCHEIBEL, ROBERT C	
MC Carthy Tetrault Box 48 Suite 4700 66 Wellington Street West Toronto Dominion Bank Tower Toronto Ontario, CANADA			ART UNIT 2616	
			PAPER NUMBER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/023,641

Applicant(s)

KUHL ET AL.

Examiner

Robert C. Scheibel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

- This action acknowledges the receipt of Applicant's Amendment filed 4/6/2006.
- Claims 1-8 have been amended.
- Claim 11 has been cancelled.
- New claims 12-23 have been added.
- Claims 1-10 and 12-23 are currently pending.

Response to Arguments

1. Applicant's arguments, see the first paragraph on page 10, filed 4/6/2006, with respect to the objections to drawings 1-3B have been fully considered and are persuasive. The objection to drawings 1-3B has been withdrawn.
2. Applicant's arguments, see the second paragraph on page 10, filed 4/6/2006, with respect to the rejection of claims 3-6 under 35 U.S.C. 112, second paragraph, have been fully considered and are persuasive. The rejection of claims 3-6 under 35 U.S.C. 112, second paragraph, has been withdrawn.
3. Applicant's arguments, see pages 10-11, filed 4/6/2006, with respect to the rejection of claims 1-11 under 35 U.S.C. 103(a) have been fully considered but they are not persuasive. In the fourth paragraph on page 10, Applicant summarizes portions of Endo. Applicant basically argues that Endo is a device providing a one queue to one output interface relationship. While portions of this summary may be accurate, it does not tell the whole story. For example, while the selected passages show one queue per output interface, there are other places which show multiple queues per output interface (Figure 7, for example).

In the next paragraph, Applicant states that the present application differs from Endo in that it transmits packet data from a plurality of traffic flows to an egress card. This is done in Endo in Figure 7 as described in more detail in the rejection below. Further, Applicant states that there is a destination address associated with each re-assembly queue. Examiner cannot find support in the specification for this limitation. The specification appears to indicate that there is one queue at each egress card for each connection within the network element. A connection is from a particular ingress card (x, for example) to a particular egress card (y, for example). Since y is fixed on each egress card, there is essentially a queue corresponding to each ingress card. Endo discloses this as well. The rejection below assumes that Applicant intends to claim a queue for each connection within the network element. The claim is also rejected under 35 U.S.C. 112, first paragraph, for the new matter that has been introduced with this amendment. Applicant's next two paragraphs continue this line of argument and point out where in the claims the related limitations can be found.

The next paragraph discusses claims 13-23 and states that since claims 13 and 20 define limitations of a plurality of packet-ordered streams transmitting cells simultaneously over the network element, the claims are allowable. Applicant asserts that Endo reserves an output interface during cell transfer and is thus unable to provide simultaneous cell transfer over the device. Examiner respectfully disagrees. The embodiment in Endo of Figure 7 discloses the limitations of this claim as discussed in more detail below. Examiner respectfully disagrees with the assertion that Endo does not teach simultaneous transmission for multiple streams; see lines 53-55 of column 7, for example.

Claim Objections

4. Claim 8 is objected to because of the following informalities: it now depends from claim 11 which has been cancelled. Claim 8 should be amended to depend from claim 7 as in the previous set of claims. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims **1-10 and 12-23** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement as new matter has been added to the claims. The claims contains subject matter which was not described in the original specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Claims **1 and 7** contain the limitation that “each reassembly queue corresponds to a respective destination address” (lines 14-15 of claim 1 and lines 16-17 of claim 7) and “said reassembly queue is associated with said destination address” (lines 15-16 of claim 1 and lines 17-18 of claim 7). Similarly, claim **13** contains the limitation “according to the destination address” (lines 13-14). Claim **20** contains the limitations “a reassembly queue associated with the destination address” (line 11), “according to the destination address” (line 15), and “each

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reassembly queue being associated with a different destination address" (line 16). The specification does not contain support for these limitations; Examiner cannot find any mention of reassembly queues being associated with a particular destination address. The specification appears to support reassembly queues that correspond to a particular flow through the switch. If this is what applicant intends to claim, the claims should be amended to avoid confusion.

Further, Endo anticipates this limitation as disclosed in the rejection below.

Claims **2-6, 8-10, 12, 14-19, and 21-23** are dependent upon claims 1, 7, 13, and 20 and are thus similarly rejected as containing new matter.

8. Claims **13-19** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim **13** recites the limitation "said packet-ordered fixed length cell" in line 8. There is insufficient antecedent basis for this limitation in the claim. Claims 14-19 depend from claim 13 and are thus rejected under the same grounds.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent

10. Claims **1-10, 12-17, and 19-22** are rejected under 35 U.S.C. 102(a) as being anticipated by EP 1 009 132 A2 to Endo et al.

Regarding claim 1, Endo discloses a method of transmitting packets from a plurality of traffic flows through a network element, the network element having an egress card, said method comprising the steps of: segmenting each of said packets into at least one data part (see paragraph 26 in column 6), the each packet and at least one data part both being associated with a destination address (see paragraph 29 of column 6); transmitting said at least one data part through the network element to the egress card in a packet-ordered stream (see lines 40-46 of column 7); and queuing said at least one data part received at the egress card to a reassembly queue in a plurality of reassembly queues (see queues 21-x-y in figure 7) of said egress card to reassemble said each packet in the reassembly queue, wherein each reassembly queue corresponds to a respective destination address associated with one or more of the packets (there is one queue for each flow in figure 7, wherein each flow is defined by an input card/output card pair; the numbering in figure 7 shows this (21-x-y where x corresponds to the input card and y corresponds to the output card)) and said reassembly queue is associated with said destination address (as indicated by the numbering of the queues in figure 7, the queues are associated with a flow through the switch, and this flow is interpreted as the destination address).

Regarding claim 7, Endo discloses a network element providing datapath connectivity for a plurality of traffic flows, each of said plurality of traffic flows transmitting variable-length packets through said network element, said network element comprising: an ingress card (3-x of figure 7, for example) having a segmentation module for segmenting each variable-length packet of each of said plurality of traffic flows into at least one cell (see paragraph 26 in column 6), said each packet and said at least one cell being associated with a destination address (see paragraph 29 of column 6), and said ingress card transmitting said at least one cell in a packet ordered

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stream (see lines 40-46 of column 7); and an egress card receiving said packet ordered stream, said egress card having an egress queuing module for queuing each received cell at said egress card into a reassembly queue in a plurality of reassembly queues (see queues 21-x-y in figure 7), wherein each reassembly queue corresponds to a respective destination address associated with one or more of the packets (there is one queue for each flow in figure 7, wherein each flow is defined by an input card/output card pair; the numbering in figure 7 shows this (21-x-y where x corresponds to the input card and y corresponds to the output card)) and said reassembly queue is associated with said destination address (as indicated by the numbering of the queues in figure 7, the queues are associated with a flow through the switch, and this flow is interpreted as the destination address).

Regarding claim 13, Endo discloses a method of transmitting variable length packets through a network element having a plurality of ingress cards, a plurality of egress cards and a cell-based switch fabric, the method comprising: a) segmenting at one of said plurality of ingress cards each incoming packet received in a plurality of ingress traffic flows (lines 55-57 of column 5) into fixed length cells (see paragraph 26 in column 6) and ordering the cells in sequential packet order (in figures 1 and 7, the cells are shown in packet order), said each incoming packet and said fixed length cells being associated with a destination address (see paragraph 29 of column 6); b) transmitting each of said packet-ordered fixed length cell into a plurality of packet-ordered streams to one of said plurality of egress cards according to the destination address of the each packet (see lines 40-46 of column 7), said plurality of packet-ordered streams transmitting cells simultaneously over the network element towards the one egress card (see lines 5055 of column 7); c) assigning said each cell in one of said respective packet-ordered streams to a

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reassembly queue in a plurality of reassembly queues (see queues 21-x-y in figure 7) at said one egress card according to the destination address (the destination address is used to generate the internal header (see paragraph 26) which in turn is used to determine where to route the cell within the switch and is thus used to direct the cell to the queue in the egress card), and reassembling the each cell in the reassembly queue into the each incoming packets (see lines 1-3 of column 4); and d) transmitting the reassembled packets in an egress traffic flow from the network element towards the destination address (see lines 1-3 of column 4), wherein each reassembly queue can accept cells from more than one ingress traffic flow of said plurality of ingress traffic flows (just as lines 55-57 indicate that an input interface processes packets from a plurality of transmission paths, it is also true that these packets (from different transmission paths (traffic flows)) can be routed through the same output or reassembly queue).

Similarly regarding claim 20, Endo discloses a network element having a cell-based switch fabric for switching variable-length packets, comprising: a segmenting module for segmenting each incoming packet received from a plurality of ingress flows (lines 55-57 of column 5) into fixed length cells (see paragraph 26 in column 6); an ordering module for ordering the cells from the segmenting module in sequential packet order (in figures 1 and 7, the cells are shown in packet order); a switching module for switching each packet-ordered cell into one of a plurality of packet-ordered streams (elements 1, 2, and 101 of figure 7) according to a destination address associated with the each packet (see paragraph 29 of column 6), said plurality of packet-ordered streams transmitting cells simultaneously over the network element (see lines 5055 of column 7); a reassembly queue associated with the destination address for reassembling cells associated with the destination address (see queues 21-x-y in figure 7) into the each packet

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(the destination address is used to generate the internal header (see paragraph 26) which in turn is used to determine where to route the cell within the switch and is thus used to direct the cell to the queue in the egress card), and transmitting the each reassembled packet in an egress flow towards the destination address (see lines 1-3 of column 4); and an assignment module for assigning each cell to the reassembly queue among a plurality of reassembly queues according to the destination address associated with the each packet, each reassembly queue being associated with a different destination address (the destination address is used to generate the internal header (see paragraph 26) which in turn is used to determine where to route the cell within the switch and is thus used to direct the cell to the queue in the egress card), wherein each reassembly queue can accept cells from more than one ingress flow of said plurality of ingress flows (just as lines 55-57 indicate that an input interface processes packets from a plurality of transmission paths, it is also true that these packets (from different transmission paths (traffic flows)) can be routed through the same output or reassembly queue).

Regarding claim 2, Endo discloses the limitation that said at least one data part of each said packet from one of said plurality of data flows are transmitted to the egress card in sequential order without any other data part from another of said packets from another of said plurality of traffic flows interleaved therebetween (see lines 19-21 of column 3 and lines 40-46 of column 7, for example).

Regarding claim 3, Endo discloses the limitation that said plurality of traffic flows transmit frames to said network element in lines 55-57 of column 5.

Regarding claim 4, Endo discloses the limitation that said network element includes an ingress card (input interface 3 of figure 1); and step (1) is performed by said ingress card (clear

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from figure 1 in that the queues are contained on the input interface and the queues included packets segmented into cells; see also lines 9-28 of column 6).

Regarding claim 5, Endo discloses the limitation that each traffic flow of said plurality of traffic flows has a weight and said each traffic flow receives bandwidth on said packet ordered stream based on said weight of said each traffic flow in lines 35-50 of column 9 which indicate that a priority can be given to certain packets. As explained in the last sentence of this passage, a high priority packet is transmitted prior to a low priority packet and thus carries a greater and different weight than a low priority packet.

Regarding claim 6, Endo discloses the limitation that each traffic flow of said plurality of traffic flows is associated with a class of traffic flow (see lines 39-40 of column 9), said class indicating a priority for said traffic flow (see lines 35-50 of column 9).

Regarding claim 8, Endo discloses the limitation that said ingress card further has an ingress queuing module adapted for queuing said variable-length packets of each of said plurality of traffic flows into a separate queue at said ingress card of said network element in lines 13-18 of column 6 as well as queues 65 of figure 1.

Regarding claim 9, Endo discloses the limitation that each traffic flow of said plurality of traffic flows has a weight and said each traffic flow receives bandwidth on said packet ordered stream based on said weight of said each traffic flow in lines 35-50 of column 9 which indicate that a priority can be given to certain packets. As explained in the last sentence of this passage, a high priority packet is transmitted prior to a low priority packet and thus carries a greater and different weight than a low priority packet.

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Regarding claim 10, Endo discloses the limitation that each traffic flow of said plurality of traffic flows is associated with a class of traffic flow (see lines 39-40 of column 9), said class indicating a priority for said traffic flow (see lines 35-50 of column 9).

Regarding claim 12, Endo discloses the limitation that said at least one cell of each said packet from one of said plurality of data flows are transmitted from said ingress card in sequential order without any cell from another of said packets from another of said plurality of traffic flows interleaved therebetween (see lines 19-21 of column 3 and lines 40-46 of column 7, for example).

Regarding claim 14, Endo discloses the limitation that the plurality of ingress traffic flows carry data formatted according to one or more communication protocols in paragraph 29 of column 6 which describes that IP packets are carried through the traffic flows.

Similarly, regarding claim 15, Endo discloses the limitation that said protocols are one or more of ATM, MPLS, and IP protocols in paragraph 29 of column 6 which indicates that the IP protocol is used.

Regarding claim 16, Endo discloses the limitation that each cell is switched to one of said plurality of packet ordered streams based on a class of service associated with the ingress traffic flow from which the network element received the incoming packet associated with the cell in lines 7-10 of column 8 and lines 35-40 of column 9.

Regarding claim 17, Endo discloses the limitation that step c) further comprises providing associating one of said plurality of reassembly queues to each class of service associated with the plurality of ingress traffic flows in figure 11 and lines 12-14 of column 13.

Regarding claim 19, Endo discloses the limitation of weighting packets from each ingress traffic flow for switching each packet-ordered cell of the packets into a respective one of the plurality of packet-ordered streams, wherein each of said plurality of packet-ordered streams is associated with a traffic flow priority in lines 7-10 of column 8 and lines 35-40 of column 9.

Regarding claim 21, Endo discloses the limitation that the segmenting module and the ordering module are on the ingress card of the network element in figures 1, 3, and 7 which show the incoming packet segmented and ordered in the ingress card.

Regarding claim 22, Endo discloses the limitation that the plurality of reassembly queues and the assignment module are provided on an egress card of the network in elements 4-x of figure 7.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP 1 009 132 A2 to Endo et al in view of EP 1 137 227 A2 to Kawai et al.

Endo discloses all limitations of parent claim 16 as described in the rejection under 35 U.S.C. 102(a) above. Endo does not disclose expressly the limitation of claim 18 that the class of service indicates a high, medium, and low traffic priority. Kawai discloses the limitation of using at least 3 QoS classes in paragraph 29 on page 6. Kawai and Endo are analogous art as they are from the same field of endeavor of packet switching devices. At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Endo to use 3 (high, medium, and low) QoS classes. The motivation for doing so would have been to support more classes of traffic and thus make the switch available to a broader range of applications. Therefore, it would have been obvious to combining Kawai with Endo for the benefit of supporting additional classes of traffic to obtain the invention as specified in claim 18.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP 1 009 132 A2 to Endo et al in view of U.S. Patent 6,449,708 to Dewhurst et al. Endo does not disclose expressly the limitation of claim 23 that the reassembly queues are implementd using an FPGA. Dewhurst discloses the limitation of implementing circuitry using FPGAs in lines 19-26 of column 1. At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Endo to implement the reassembly queues using an FPGA. The motivation for doing so would have been low non-recurring engineering costs, fast turnaround and low risk.

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Therefore, it would have been obvious to combining Dewhurst with Endo for the benefit of reduced cost, fast turnaround, and lower risk to obtain the invention as specified in claim 23.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert C. Scheibel whose telephone number is 571-272-3169. The examiner can normally be reached on Monday and Thursday from 6:30-5:00 Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema S. Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RCS 6-11-06

Robert C. Scheibel
Examiner
Art Unit 2616

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